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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,937	12/14/2004	Yutaka Murakami	P26356	8654
7055 7590 05/24/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER MILLER, BRANDON J	
			ART UNIT	PAPER NUMBER
			2617	
			NOTIFICATION DATE	DELIVERY MODE
			05/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/516,937	Applicant(s) MURAKAMI ET AL.	
	Examiner Brandon J. Miller	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-10, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali (US 6,421,333 B1) in view of Lopes et al. (US 2004/0255040 A1).

Regarding claim 1 Jalali teaches a communication method wherein a symbol of one channel is transmitted by means of a first carrier group (see col. 2, lines 13-28 and col. 3, lines 17-20). Jalali teaches symbols of a plurality of channels are multiplexed and transmitted by means of a second carrier group (see col. 2, lines 13-28 and col. 3, lines 20-24 & 55-59). Jalali does not specifically teach symbols modulated by means of a different modulation method. Lopes teaches symbols modulated by means of a different modulation method (see paragraphs [0031] & [0032]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include symbols modulated by means of a different modulation method because Jalali teaches transmitting symbols on different carriers and the different modulation means in Lopes would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 2 Jalali teaches a symbol is transmitted by means of a first carrier group to a communicating party (see col. 2, lines 13-28 and col. 3, lines 17-20). Jalali teaches a symbol is transmitted by means of a second carrier group to a communicating party (see col. 2, lines 13-

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28 and col. 3, lines 20-24 & 55-59). Jalali does not specifically teach information on propagation path conditions estimated by a communicating party is received, and propagation path conditions that are worse than those of the first communicating party. Lopes teaches receiving information on propagation path conditions estimated by a communicating party (see paragraph [0044]). Lopes teaches propagation path conditions that are worse than those of the first transmission scheme (see paragraph [0052] and FIG. 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include information on propagation path conditions estimated by a communicating party is received, and propagation path conditions that are worse than those of the first communicating party because it would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 3 Jalali teaches wherein a symbol transmitted by a first carrier group has a higher degree of importance in communication than a symbol transmitted by a second carrier group (see col. 3, lines 15-24 and Table 2).

Regarding claim 4 Jalali teaches first data transmitted by a first carrier group; a difference between second and first data is generated and then transmitted by a second carrier group (see col. 2, lines 13-28 and col. 3, lines 15-25).

Regarding claim 6 Jalali and Lopes teach a device as recited in claim 1 except for a symbol of one channel that is transmitted by a first carrier group at the start of communication; and after information on propagation path conditions estimated by a communicating party is received, symbols are transmitted by means of the first carrier group and a second carrier group. Jalali does teach a symbol of one channel that is transmitted by a first carrier group at the start of

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communication and symbols are that are transmitted by means of the first carrier group and a second carrier group (see col. 3, lines 15-24). Lopes does teach receiving information on propagation path conditions estimated by a communicating party (see paragraph [0044]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a symbol of one channel that is transmitted by a first carrier group at the start of communication; and after information on propagation path conditions estimated by a communicating party is received, symbols are transmitted by means of the first carrier group and a second carrier group because it would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 7 Jalali and Lopes teach a device as recited in claim 1 except for wherein a known symbol is transmitted at the start of communication; and information on propagation path conditions estimated by a communicating party using the known symbol is received. Jalali does teach wherein a known symbol is transmitted at the start of communication (see col. 3, lines 15-20). Lopes does teach and information on propagation path conditions estimated by a communicating party is received (see paragraph [0044]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include wherein a known symbol is transmitted at the start of communication; and information on propagation path conditions estimated by a communicating party using the known symbol is received because it would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 8 Jalali teaches a transmitting apparatus comprising: modulating a signal of a first channel and generating a first symbol (see col. 2, lines 13-28 and col. 3, lines 17-20).

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Jalali teaches modulating a signal of a second channel and generating a second symbol (see col. 2, lines 13-28 and col. 3, lines 20-24 & 55-59). Jalali teaches transmitting a first symbol by means of a first carrier group (see col. 3, lines 17-20). Jalali teaches multiplexing a first symbol and a second symbol and transmitting those symbols by means of a second carrier group (see col. 3, lines 20-24 & 28-31). Jalali does not specifically teach a first modulation section, and a second modulation section. Lopes teaches symbols modulated by means of a different modulation method (see paragraphs [0031] & [0032]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a first modulation section and a second modulation section because Jalali teaches transmitting symbols on different carriers and the different modulation means in Lopes would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 9 Jalali and Lopes teach a device as recited in claim 8 except for receiving information on propagation path conditions estimated by a communicating party; and determining transmission of symbol by means of a first transmitting section to a first communicating party and transmission of a symbol by means of a second transmitting section to a communicating party whose propagation patch conditions are worse than those of the first communicating party based on propagation path conditions of a plurality of communicating parties. Jalali does teach a symbol is transmitted by means of a first carrier group to a communicating party (see col. 2, lines 13-28 and col. 3, lines 17-20). Jalali does teach a symbol is transmitted by means of a second carrier group to a communicating party (see col. 2, lines 13-28 and col. 3, lines 20-24 & 55-59). Lopes does teach receiving information on propagation patch conditions estimated by a communicating party (see paragraph [0044]). Lopes does teach

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propagation path conditions that are worse than those of the first transmission scheme (see paragraph [0052] and FIG. 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include receiving information on propagation path conditions estimated by a communicating party; and determining transmission of symbol by means of a first transmitting section to a first communicating party and transmission of a symbol by means of a second transmitting section to a communicating party whose propagation patch conditions are worse than those of the first communicating party based on propagation path conditions of a plurality of communicating parties because it would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 10 Jalali and Lopes teach a device as recited in claim 3 and is rejected given the same reasoning as above.

Regarding claim 12 Jalali and Lopes teach a device as recited in claim 8 except for transmitting a symbol of a first channel using a first carrier group at the start of communication; and transmitting a symbol using a second carrier group after information on propagation path conditions estimated by a communicating party is received. Jalali does teach wherein a known symbol is transmitted at the start of communication (see col. 3, lines 15-20). Jalali does teach a symbol of one channel that is transmitted by a first carrier group at the start of communication and symbols are that are transmitted by means of the first carrier group and a second carrier group (see col. 3, lines 15-24). Lopes does teach and information on propagation path conditions estimated by a communicating party is received (see paragraph [0044]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include transmitting a symbol of a first channel using a first carrier group at the start of

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communication; and transmitting a symbol using a second carrier group after information on propagation path conditions estimated by a communicating party is received because it would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

Regarding claim 13 Jalali and Lopes teach a device as recited in claim 7 and is rejected given the same reasoning as above.

Claims 5, 11, and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jalali (US 6,421,333 B1) in view of Lopes et al. (US 2004/0255040 A1) and Hwang et al. (US 6,791,964 B1).

Regarding claim 5 Jalali and Lopes teach a device as recited in claim 1 except for carriers of a first carrier group and a second carrier group that are arranged orthogonally. Hwang teaches carriers of a first carrier group and a second carrier group that are arranged orthogonally (see col. 3, lines 48-54). It would have also been obvious to modify the invention to include carriers of a first carrier group and a second carrier group that are arranged orthogonally because this would allow for improved coding data onto separate channels for transmission in a multicarrier system (see Jalali, col. 1, lines 9-13).

Regarding claim 11 Jalali, Lopes, and Hwang teach a device as recited in claim 5 and is rejected given the same reasoning as above.

Regarding claim 14 Jalali teaches a receiving apparatus comprising: receiving by means of a first carrier group a radio signal in which a symbol of one channel is modulated (see col. 2, lines 13-28 and col. 3, lines 17-20). Jalali teaches receiving by means of a second carrier group a radio signal in which a symbols of plurality channels are multiplexed (see col. 2, lines 13-28).

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Jalali does not specifically teach a plurality of channels modulated by means of a different modulation method, demodulating a signal received by means of a first carrier, demodulating a signal received by a second carrier; and a separating a signal demodulated on a channel-by-channel basis. Lopes teaches symbols modulated by means of a different modulation method (see paragraphs [0031] & [0032]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a first modulation section and a second modulation section because Jalali teaches transmitting symbols on different carriers and the different modulation means in Lopes would allow for reduced effects of errors resulting from any single carrier (see Jalali, col. 2, lines 30-32).

It would have also been obvious to further modify Jalali and Lopes to include the demodulating a signal received by means of a first carrier, demodulating a signal received by a second carrier; and a separating a signal demodulated on a channel-by-channel basis taught in Hwang (see Hwang, col. 3, lines 50-59 and col. 4, lines 4-15) because this would allow for improved coding data onto separate channels for transmission in a multicarrier system (see Jalali, col. 1, lines 9-13).

Regarding claim 15 Lopes teaches estimating a propagation path condition based on a known symbol of a radio signal received by a first receiving section; and transmitting information on propagation path conditions estimated (see paragraphs [0043] & [0044]).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Miyoshi et al. U.S. Patent No. 7,133,698 B2 discloses a radio base station apparatus and radio communication method.


Matsumoto et al. U.S. Patent No. 7,003,050 B2 discloses a radio transmitter, radio receiver, and multilevel modulation communication system.

Harada et al. U.S. Patent No. 5,774,450 discloses a method of transmitting orthogonal frequency division multiplexing signal and receiver.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J. Miller whose telephone number is 571-272-7869. The examiner can normally be reached on Mon.-Fri. 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


May 14, 2007


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